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CURRENT LITERATURE

BOOK REVIEWS

Morphology and cytology of fungi

DeBary's great treatise, indispensable as it still is to the working mycologist, has become in many respects so obsolete as to be not only unsatisfactory but even misleading in the hands of less advanced students of the fungi, and a modern, authoritative work in the English language, with the same comprehensive scope, is greatly to be desired. The volume by Dame Gwynne-Vaughan[1] in large measure meets this need, so far as the groups of which it treats are concerned. Presumably another volume in the same series is forthcoming, which will complete the account.

The first part of the book, occupying thirty-four pages, is devoted to general introductory matter, applicable to the fungi as a whole. It contains definitions, a general outline of the classification adopted, and brief discussions of such topics as saprophytism, parasitism, growth reactions, and symbiosis, the last-named term used in a narrowly restrictive sense to apply only to lichens and mycorhizas. The remainder of the book is devoted to a detailed treatment by subdivisions of the particular groups specified in the title.

In the matter of systematic treatment the author has been commendably conservative for the most part, but she has not hesitated to make radical rearrangement of the currently accepted systems where the need has existed. This is strikingly shown in the treatment of the Ascomycetes. The "great group" Ascomycetes is divided into three "groups" (why not classes and subclasses?): Plectomycetes, Discomycetes, and Pyrenomycetes. Of these, the Discomycetes includes all the orders commonly recognized as included in that assemblage; the Pyrenomycetes is made to include, with appropriate reservations, the Laboulbeniales, but does not include the Erysiphales, which are placed in the primitive "group" Plectomycetes, with the Exoascales and the Plectascales. The latter order is expanded to include everything from the Endomycetaceae and the yeasts to the Terfeziaceae. The result is an arrangement simpler and more usable than that of Engler, which at the same time does no violence to our present admittedly very imperfect knowledge of the relationships among these primitive forms. Furthermore, it is a pleasure to see in a modern book a reversion to the earlier conception of the Archimycetes, the Oomycetes, and the Zygomycetes as three coordinate groups of the Phycomycetes, rather than an adherence to the more recent but less logical practice of placing all the lower Phycomycetes in the Oomycetes.

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[1] Gwynne-Vaughan, Dame Helen, Fungi. Ascomycetes, Ustilaginales, Uredinales. Cambridge Botanical Handbooks. pp. xi+232. *figs. 196.* Cambridge. 1922.

The general discussion of each subclass is followed by a key to its orders, and of each order by a key to its families. These keys are clear and simple, and add greatly to the value of the book. After each special topic, or discussion of a family, a bibliography is appended, in which the selection of the titles has been dictated by matured judgment. The illustrations are numerous and appropriate. Many of them are crudely drawn, which detracts greatly from the appearance of the book, but they are always clear and accurate. Much consideration is given to the cytological aspect, which in view of the research interests of the author is not surprising. The frequency with which she emphasizes the points in need of further cytological investigation should prove stimulating to workers in this field.

The implication on page 47 that we must accept two nuclear fusions as the normal situation in all Ascomycetes will be regarded by many mycologists as premature. The entire subject must be carefully reinvestigated in the light of recent parallel studies on the Basidiomycetes before this can be regarded as definitely established. In this connection, the reference to clamp connections as structures which have no significance other than to facilitate the passage of food (p. 1), and as merely vegetative phenomena (p. 188), will have to be revised. Again, the statement that "in *Puccinia*, *Phragmidium*, and other Uredinales . . . . the basidia are developed in chains" seems to stress unduly the cytological conception of the basidium, just as the thought of each cell of the promycelium as a one-spored basidium, as held by other botanists, seems to place undue emphasis on morphological detail. Lacking more convincing evidence than has yet been presented, it would seem better to retain the intermediate and generally accepted view that the teleutospore cell is not a basidium, but is the cell that gives rise to one, either externally, as a promycelium, or internally. In fact, the author is not consistent in her treatment, and seems to recognize the latter view on the same pages on which she gives different interpretations.

The proofreading has been carefully done and typographical errors are few. Fig. *27e* is a transverse, not a longitudinal section, and a few words, mainly proper names, are misspelled, all of very minor importance. The author is to be congratulated on the effective presentation of a mass of information which has heretofore been scattered and largely inaccessible to the majority of the workers in this field. She has performed an invaluable service in collating this work and in presenting it so clearly and concisely. The book is a necessity for the reference shelf of every laboratory where mycology is taught.—G. W. MARTIN.

Lichens

Miss ANNIE L. SMITH,[2] of the British Museum, is the author of a notable work on lichens, in which are considered the history of lichenology, the morphol-

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[2] SMITH, ANNIE L., Lichens. 8vo. pp. xxvii+464. *figs. 165*. Cambridge University Press, England. 1921.